

AF/1764
ITW

Docket No.: E-41007

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MAIL STOP: ~~ABEBA~~ BRIEF-PATENTS

By: 

Date: November 9, 2004

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

Applic. No. : 09/632,248 Confirmation No.: 1144
Inventor : Wolfgang Maus
Filed : August 3, 2000
Title : Catalytic Exhaust-Gas Purification Device
and Associated Compensating Layer, in
Particular for Motor Vehicles
TC/A.U. : 1764
Examiner : Hien Thi Tran
Customer No. : 24131

Hon. Commissioner for Patents
Alexandria, VA 22313-1450

BRIEF ON APPEAL

S i r :

This is an appeal from the final rejection in the Office action dated July 14, 2004, finally rejecting claims 1-3, 6-15, 18-19 and 21-22.

Appellant submits this *Brief on Appeal* in triplicate, including payment in the amount of \$340.00 to cover the fee for filing the *Brief on Appeal*.

11/15/2004 RMEBRAHT 00000016 09632248

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Real Party in Interest:

This application is assigned to Emitec Gesellschaft für Emissionstechnologie mbH of Lohmar, Germany. The assignment will be submitted for recordation upon the termination of this appeal.

Related Appeals and Interferences:

No related appeals or interference proceedings are currently pending which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims:

Claims 1-3, 6-15, 18-19 and 21-22 are rejected and are under appeal.

Status of Amendments:

No claims were amended after the final Office action. A *Notice of Appeal* was filed on September 23, 2004.

Summary of the Claimed Subject Matter:

The invention as recited in claim 1 of the instant application concerns a catalytic exhaust-gas purification device, which includes a casing 3, a monolithic ceramic honeycomb element 2 mounted in the casing 3, and a compensating layer 4 disposed between the casing 3 and the honeycomb element 2 and wound

around the honeycomb element 2 (see Fig. 1 and page 11, lines 2-14 of the specification). The compensating layer 4 includes a swelling mat 5 with border regions 9 at risk from abrasion and an insulating mat 6 having a border 7 and an inner region 8 (see Figs. 1 and 2 and page 11, lines 16-20 and page 13, line 22). The border 7 of the insulating mat 6 has a region, at least at one end of the honeycomb element 2, which is thicker than the inner region 8 (see Fig. 2 and page 13, lines 21-22). The swelling mat 5 is disposed adjacent a side of the inner region 8 of the insulating mat 6, which faces away from the honeycomb element 2 (see Fig. 2). The thicker region of the border 7 of the insulating mat 6 covers the border regions 9 of the swelling mat 5 (see Fig. 2 and page 13, lines 24-26).

The invention as recited in claim 12 of the instant application concerns a compensating layer 4 as described above.

References Cited:

4,344,922	Santiago et al.	August 17, 1982
4,999,168	Ten Eyck	March 12, 1991
6,077,483	Locker et al.	June 20, 2000

Grounds of Rejection to be Reviewed on Appeal

1. Whether or not claims 1-3, 7-8, 12-15, and 19 are anticipated by Locker et al. under 35 U.S.C. §102(e).
2. Whether or not claims 6 and 18 are obvious over Locker et al. in view of Ten Eyck under 35 U.S.C. §103(a).
3. Whether or not claims 9-11 and 21-22 are obvious over Locker et al. in view of Santiago et al. and Ten Eyck under 35 U.S.C. §103(a).

Grouping of Claims:

Claims 1 and 12 are independent. Claims 2-3 and 6-11 depend on claim 1 and claims 13-15, 18-19, and 21-22 depend on claim 12. The patentability of claims 2-3, 6-11, 13-15, 18-19, and 21-22 are not separately argued. Therefore, claims 2-3 and 6-11 stand or fall with claim 1 and 13-15, 18-19, and 21-22 stand or fall with claim 12.

Argument:

Whether or not claims 1-3, 7-8, 12-15, and 19
are anticipated by Locker et al. under 35
U.S.C. §102(e).

In item 2 on pages 2-3 of the above-mentioned Office action, claims 1-3, 7-8, 12-15, and 19 have been rejected as being anticipated by Locker et al. under 35 U.S.C. § 102(e).

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

compensating layer disposed between said casing and said honeycomb element and wound around said honeycomb element, said compensating layer including:

a swelling mat with border regions at risk from abrasion;

an insulating mat having a border and an inner region;

said border of said insulating mat having a thicker region at least at one end of said honeycomb element than at said inner region.

Claim 12 calls for, inter alia:

an insulating mat with a border and an inner region, said inner region having a given thickness and said border of said insulating mat being thicker than said inner region at least in parts thereof.

According to Locker et al., a thermal barrier coating is disposed on the outer cylinder surface of the support. The coating includes an adherent porous refractory ceramic layer, wherein the term "ceramic" is used in the sense to encompass glass, semi-crystalline ceramics such as glass-ceramics, and conventional crystalline ceramics substantially free of glassy phases (see column 2, lines 22-27).

In view of the characteristics of the coating, Locker et al. point out that the adherent isolative barrier coatings are at least as effective as prior art refractory fiber mat coatings in reducing heat transfer from the substrate to the substrate enclosure or to intumescent mat materials lining the enclosure. Moreover, they shall be much more durable, and provide a rigid rather than resilient base against which the exterior intumescent mat layer may more efficiently apply retention pressure. Thus, these coatings shall avoid the problem of fiber mat degradation and shall decrease the likelihood of substrate slippage during use. See column 3, lines 39-48 of Locker et al. Therefore, even Locker et al. recognized the differences between a rigid thermal barrier coating and an insulating mat.

A "mat" generally means a piece of course, woven, plaited, or felted fabric (see, for example, the definition according to Merriam-Webster Online Dictionary). Normally, such a mat is flexible, windable, foldable, compressible, and so on. Most of these characteristics also apply to an insulating mat. Therefore, the insulating mat also inherently has the ability of damping and resilience, which further supports the function of the swelling mat. This behavior is completely different from the coating of Locker et al.

The Examiner has stated in the paragraph bridging pages 5-6 of the Office action that the claims of the instant application do not require the resilient base and also there is nothing recited in the claims to exclude the rigid base of Locker et al. The Examiner has further stated that it is unclear as to where it is disclosed in the specification that the mat of the instant application possesses all of the above properties.

As clearly discussed above, it is well-known for a person skilled in the art that the term "mat" refers to a piece of course, woven, plaited, or felted fabric that is flexible, windable, foldable, compressible, and so on and has the ability of damping and resilience. Since these properties are inherently associated with a "mat", the recitation of them in the claims should not be required. It is noted that the above properties can also be derived from the specification of the instant application (see, for example, page 4, line 2, page 7, line 15, and page 12, line 9).

Further, Locker et al. state that the barrier coatings are generated upon heat treatment, in particular by a sintering heat treatment (see column 4, lines 28-34). Therefore, there is a large bonding surface and at least partially no separate surfaces exist between the coating and the substrate.

In contrast to the above-described connection between the coating and the substrate according to Locker et al., the invention of the instant application teaches simply the insulating mat being wrapped or wound around the honeycomb element. This means that there are well-defined surfaces of each component that already lower the heat transfer.

Moreover, gaps or similar cavities may occur between the honeycomb element and the insulating mat so that the contact surface of both components is reduced and the enclosed air further reduces the heat transfer. These are further structural differences between the invention of the instant application and Locker et al.

The Examiner has stated in the second paragraph on page 6 of the Office action that the language of the claims of the instant application does not exclude the bonding surface nor require separate surfaces. It is noted that no bonding surface but only separate surfaces according to the invention of the instant application are the results of the different production method used and are can be directly derived from the language of the claims of the instant application. It is also noted that the structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where

the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., *In re Garnero*, 162 USPQ 221, 223 (CCPA 1979). See MPEP 2113.

In connection with the above-described characteristics of the insulating mat according to the invention of the instant application, the over-all damping characteristic and insulating characteristic of the compensation layer is increased. Moreover, winding an insulating mat around the honeycomb body is easier to carry out so that the time for manufacturing is lowered as well as the resulting costs. In addition, the insulating mat can be more easily fitted to the finally existing space between the casing and the honeycomb element because of its flexible nature. This also leads to a better protection of the swelling mat because the tolerances of the casing, the honeycomb body, or the swelling mat can be easily overcome by folding the mat accordingly.

Clearly, Locker et al. do not show an insulating mat as recited in claims 1 and 12 of the instant application.

Claims 1 and 12 are, therefore, believed to be patentable over Locker et al. and since all of the dependent claims are

ultimately dependent on claims 1 or 12, they are believed to be patentable as well.

Whether or not claims 6 and 18 are obvious over
Locker et al. in view of Ten Eyck under 35
U.S.C. §103(a).

In item 8 on page 5 of the above-mentioned Office action, claims 6 and 18 have been rejected as being unpatentable over Locker et al. in view of Ten Eyck (US Pat. No. 4,999,168) under 35 U.S.C. § 103(a).

As discussed above, claims 1 and 12 are believed to be patentable over the art. Since claims 6 and 18 are dependent on claims 1 or 12, they are believed to be patentable as well.

Whether or not claims 9-11 and 21-22 are obvious
over Locker et al. in view of Santiago et al. and
Ten Eyck under 35 U.S.C. §103(a).

In item 9 on pages 5-6 of the above-mentioned Office action, claims 9-11 and 21-22 have been rejected as being unpatentable over Locker et al. in view of Santiago et al. (US Pat. No. 4,344,922) and Ten Eyck under 35 U.S.C. § 103(a).

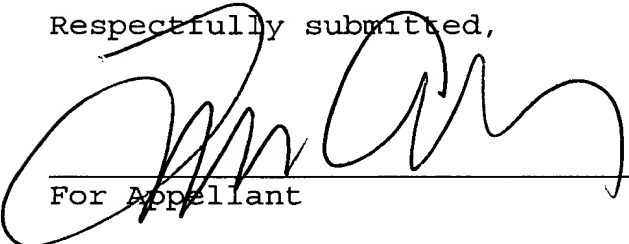
As discussed above, claims 1 and 12 are believed to be patentable over the art. Since claims 9-11 and 21-22 are

ultimately dependent on claims 1 or 12, they are believed to be patentable as well.

In view of the forgoing, the honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

Respectfully submitted,

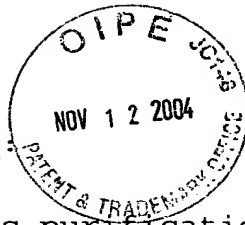
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Appendix - Appealed Claims:

1. A catalytic exhaust-gas purification device, comprising:

a casing;

a monolithic ceramic honeycomb element mounted in said casing;

a compensating layer disposed between said casing and said honeycomb element and wound around said honeycomb element, said compensating layer including:

a swelling mat with border regions at risk from abrasion;

an insulating mat having a border and an inner region;

said border of said insulating mat having a thicker region at least at one end of said honeycomb element than at said inner region; and

said swelling mat being disposed adjacent a side of said inner region of said insulating mat facing away from said honeycomb element and said thicker region of said border of said insulating mat covering said border regions of said swelling mat at risk from abrasion.

2. The catalytic exhaust-gas purification device according to claim 1, wherein said thicker region of said border is a fold toward said casing.

3. The catalytic exhaust-gas purification device according to claim 1, wherein said insulating mat contains a ceramic material.

6. The catalytic exhaust-gas purification device according to claim 1, wherein said swelling mat contains a ceramic material with adjacent cavities, said ceramic material being adapted to seal said adjacent cavities by swelling upon absorbing water.

7. The catalytic exhaust-gas purification device according to claim 1, wherein said compensating layer is formed of a composite material.

8. The catalytic exhaust-gas purification device according to claim 7, wherein said compensating layer is circumferentially wound at least once around said honeycomb element.

9. The catalytic exhaust-gas purification device according to claim 7, wherein said compensating layer is assembled from prefabricated segments.

10. The catalytic exhaust-gas purification device according to claim 9, wherein said segments are selected from the group consisting of cylindrical segments, oval segments, and half shells.

11. The catalytic exhaust-gas purification device according to claim 9, wherein said segments are matched to a contour of said casing.

12. In combination with a honeycomb element, a compensating layer to be wound around the honeycomb element, comprising:

an insulating mat with a border and an inner region, said inner region having a given thickness and said border of said insulating mat being thicker than said inner region at least in parts thereof; and

a swelling mat with border regions at risk from abrasion, said swelling mat being disposed adjacent said inner region of said insulating mat with said thicker parts of said border covers said border regions of said swelling mat at risk from abrasion.

13. The compensating layer according to claim 12, wherein said swelling mat and said insulating mat together form a composite for holding a monolithic honeycomb element in a metallic casing of a catalytic exhaust-gas purification device.

14. The compensating layer according to claim 12, wherein said thicker region of said border of said insulating mat is a fold toward said casing.

15. The compensating layer according to claim 12, wherein said insulating mat contains a ceramic material with very low heat conduction and heat convection properties.

18. The compensating layer according to claim 12, wherein said swelling mat contains a ceramic material adapted to swell upon absorbing water.

19. The compensating layer according to claim 12, wherein said compensating layer is formed of a composite material.

21. The compensating layer according to claim 19, wherein said compensating layer is assembled from prefabricated segments.

22. The compensating layer according to claim 19, wherein said segments are selected from the group consisting of cylindrical segments, oval segments, and half shells.